

## LEG STRUCTURE FOR A TRAMPOLINE

### FIELD OF INVENTION

5 The invention relates to a trampoline for sporting and/or recreational use which is soft-edged relative to conventional trampolines which support the mat of the trampoline via a solid peripheral frame exposed to the springs between the frame and the mat. More particularly, the invention relates to a leg structure for a soft-edged trampoline.

### 10 BACKGROUND TO INVENTION

US patent specification 6,319,174 discloses a form of soft-edged trampoline in which the mat of the trampoline is supported by a plurality of resiliently flexible rods received in a frame of the trampoline at the lower ends of the rods and coupled to the periphery  
15 of the bouncing mat of the trampoline at their upper ends, and which avoids the need for a solid frame about the exterior of the bouncing mat and exposed springs between the frame and periphery of the mat.

### SUMMARY OF INVENTION

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The invention provides improved or at least alternative leg structure for a soft-edged trampoline.

In this specification (including claims) the term "trampoline" is intended to extend to  
25 smaller trampolines commonly referred to as rebounders also, as well as larger trampolines of all sizes.

In broad terms in one form the invention comprises the leg structure for a trampoline having a base frame formed from a plurality of interconnectable base sections  
30 comprising: two end sections arranged to support respective adjacent base sections; and a central section arranged to support the base sections supported by the end sections at the point of attachment of the base sections.

In another form in broad terms the invention comprises the leg structure for a trampoline comprising means for supporting two adjacent base sections of a base frame formed from a plurality of base sections; and means for supporting the point of attachment of the adjacent base sections.

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In a further form in broad terms the invention comprises a trampoline support frame comprising a base frame formed from a plurality of interconnectable base sections; and a plurality of leg structures supporting joins between respective pairs of adjacent base sections.

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In another form in broad terms the invention comprises a trampoline comprising a flexible mat; a base frame formed from a plurality of interconnectable base sections; a plurality of resiliently flexible rods each having a lower end retained in the base frame and an upper end retained in the flexible mat; and a plurality of leg structures supporting

15 joins between respective pairs of adjacent base sections.

#### **BRIEF DESCRIPTION OF THE DRAWINGS**

Preferred forms of the leg structure for a trampoline are described with reference to the accompanying drawings by way of example and without intending to be limiting, wherein:

Figure 1 is a perspective view of one preferred form trampoline;

25 Figure 1A is an enlarged view showing the connection of two of the adjacent base sections of the trampoline of Figure 1;

Figure 2 shows a base section of a further preferred form trampoline in which the tubular holders are located at least partly within each base section;

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Figure 3 shows a tongue section forming part of the base section of Figure 2;

Figure 4 is a perspective view of a further preferred form trampoline; and

Figure 4A is an enlarged view of the leg structure of the trampoline of Figure 4.

## 5 DETAILED DESCRIPTION OF PREFERRED FORMS

Referring to Figure 1, one preferred form trampoline comprises a flexible mat 1 on which users may bounce, a plurality of resiliently flexible rods 2, and a base frame 3. The preferred form trampoline is circular in shape but it will be appreciated that the trampoline could be any other desired shape, such as oval, square, rectangular or similar.

The preferred form base frame 3 is in turn formed from a plurality of interconnectable base sections. Each base section is preferably formed from steel, aluminium or other suitable material.

Figure 1A shows an enlarged version of two of the base sections 4 and 5. Each base section is provided with a tongue portion at one end, for example tongue portion 6 shown on base section 5. Each base section is also provided with a recess, for example recess 7 into which the extending tongue portion of one base section is arranged to engage. As shown in Figure 1A, the base sections could have a substantially square cross-section and the tongue portion 6 could be of substantially circular cross-section although it will be envisaged that the cross-section of the base section, the recess in the base section and/or the tongue section could be of oval, square, rectangular or similar cross-sections.

Each base section is preferably provided with a plurality of tubular holders, for example 8, arranged to retain the lower ends of the flexible rods 2. The tubular holders 8 could be mounted on the exterior of the base sections as shown. It will be appreciated that the holders could be mounted in the base sections such that they are positioned on either the interior or exterior of the assembled trampoline.

Rods 2 are typically fibreglass rods but may alternatively be formed of spring steel, for example. The lower ends of the rods are retained in the tubular holders mounted on the exterior of the base sections and the upper ends of the rods are each retained in the flexible mat 1 in a suitable fitting, for example.

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It will be appreciated that the number of base sections forming the assembled trampoline could be varied but is preferably in the range from 4 to 6.

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In one preferred form, the base frame 3 could be positioned on the ground or other substantially horizontal surface. Alternatively, the trampoline could include a plurality of leg structures, for example leg 9. As shown in Figure 1, leg 1 could include a pair of end sections 10 and 11 arranged to support respective adjacent base sections. The end sections of the leg 9 could be secured to the respective base sections and each base section could include sockets arranged to retain respective end sections of the legs.

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Figure 2 illustrates an alternative form base section 20 in which the tubular holders, for example tubular holders 22 and 23, that are arranged to retain the lower ends of the flexible rods, are located at least partly within base section 20. Recess 24 provided in base section 20 that is arranged to receive an extending tongue portion of an adjacent base section could be partially obstructed by the lower end of tubular holder 23.

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Referring to Figure 3, the tongue portion 26 of the adjacent base section is formed so as to engage in recess 24. The preferred form tongue 26 is provided with a slot 28 or other suitable aperture. The slot 28 is shaped and positioned so as to receive at least one of the tubular holders of the adjacent base section, for example tubular holder 23. In this way, the tongue portion 26 is able to engage completely within the recess 24 in the adjacent base section.

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It will be appreciated that the tongue section 26 is shaped and sized so as to engage within recess 24. It will also be appreciated that further configurations of tongue section are possible. For example, the tongue section could be shaped to be positioned to one side only of the tubular holder 23 within recess 24. The base section(s) of

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Figures 2 and 3 are shown as having circular cross-section although it is possible to have other configurations of cross-section.

5 In use, the trampoline is subject to a twisting moment caused by the mat tension positioned above the frame. Connections between the base sections must successfully carry this twisting moment. It is important that the assembled trampoline retain the desired oval, square or rectangular shape regardless of this twisting moment. The use of shorter tongues, or tongues provided with recesses, can result in an assembled frame that is less able to resist the twisting moment caused by the mat tension. Furthermore,  
10 the larger the number of interconnectable base sections forming the base frame, the less able the connected base frame is able to resist these forces.

Figure 4 shows an alternative preferred form leg structure intended to increase the stability of the base frame. The leg 40 includes end sections 42 and 44 that are arranged  
15 to support adjacent base sections 46 and 48 respectively of the base frame. Referring to Figure 4A, each base frame is provided with a tubular socket into which the end section 42 of the leg structure 40 is arranged to locate. Recess 50 could also have an associated fastening component, for example clamp bolt 52 so that end section 42 is secured to base section 46.

20 As shown in both Figures 4 and 4A, the leg structure is preferably formed as a substantially U-shaped frame terminating in the end sections 42 and 44. Leg structure 40 also includes central section 54 secured to the U-shaped frame of the leg structure. The central section 54 preferably comprises a substantially V-shaped supporting brace  
25 secured to the U-shaped frame.

The leg structure 40 may also further comprise a cradle 56 or cup mounted on the central section. In use, the leg structure is positioned and shaped so that the end sections 42 and 44 support respective adjacent base sections and the central section is  
30 arranged to support the same base sections at the point of attachment of the base sections. Cradle 56 is positioned in use directly beneath the point of attachment of base sections 46 and 48 for example.

Cradle 56 is preferably shaped so as to have an access of curvature similar to the cross-section of the base sections, and is arranged to support the point of attachment of the adjacent base sections in which the cradle 56 is not secured to either of the base sections  
5 46 or 48. The base sections are positioned unsecured on the cradle.

Central section 54 prevents or reduces the relative twisting of the base sections by an opposing moment comprising an upward reaction from central structure 54 and a downward reaction resulting from the clamp 52 or other fastening within the leg socket  
10 50. In this way, the moment is effectively converted to tension in the lower member of the leg and compression at the joint between the base sections. This couple is reacted by an equal and opposite couple from the next frame section.

The foregoing describes the invention including preferred forms thereof. Alterations  
15 and modifications as will be obvious to those skilled in the art are intended to be incorporated within the scope hereof, as defined by the accompanying claims.